

## Effect of Soccer Specific Protocol on Leg Strength of University Male Soccer Players

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**Abstract:** The purpose of the study was to find out the effect of soccer specific protocol on leg strength of university male soccer players. To achieve this purpose of the study, thirty male soccer players studying in Annamalai University, Annamalai Nagar, Chidambaram, Tamil Nadu, and India were selected at random as subjects. The age of the selected subjects were from 18 to 22 years. The selected subjects were divided into two equal groups of 15 each, such as soccer specific protocol group and control group. The group-I underwent soccer specific protocol for three days per week for twelve weeks. Group-II acted as control they did not participate any special training programmes apart from their regular activities as per their curriculum. Leg strength was selected as criterion variable. The selected variable were tested by using leg lift with dynamometer at prior to and immediately after the training programme. The analysis of covariance (ANCOVA) was used to analysis the significant difference, if any between the groups. The .05 level of confidence was fixed to test the level of significance, which was considered as an appropriate. The results of the study revealed that there was significant improvement on selected criterion variable due to soccer specific protocol.

### INTRODUCTION

Soccer is one of the most popular sports in the world with a massive, global base of enthusiasts and practitioners of all ages. Today's soccer performers must be "complete athletes". They have to be quick off the mark and over 10-20 yards. They need excellent levels of both aerobic and anaerobic endurance to last the duration. They have the upper body strength to resist challenges. Upper body strength is required for shielding the ball, holding off opponents, throw-ins and also contributes to overall power and explosiveness. Lower body strength is required for kicking, jumping, tackling, twisting and turning and also forms the foundation for explosive speed. In soccer, good maximal strength is beneficial for holding off opponents and shielding the ball.

For the longest time a lot of the training done for soccer have been centered around aerobic conditioning, while overlooking important aspects like, strength, speed and power, agility and flexibility. Most players on the pitch run a great deal in the game (*estimates of between 11-13km during a 90 minute game*), so endurance training is very important but should not be done exclusively at the expense of the other aspects of conditioning. Strength training for any sport is vital to the overall success of a player. With a good foundation to

build on, soccer players fully prepared to move into building maximal strength. The benefit of soccer strength training is not only to provide the players with the necessary skills and strength but also help to keep them intact for the entire session of the play.

Soccer-specific strength and fitness training for soccer players is a hotly debated topic. Strength training for soccer athletes has been the source of debate for many years and it still unresolved. In this present study soccer specific protocol is designed to strengthening of leg muscles, abdominal and back muscles. The objectives of this study was to find out whether there any improvement on back strength and leg strength due to the effect of soccer specific strength training protocol.

### METHODOLOGY

The purpose of the study was to find out the effect of soccer specific protocol on leg strength. To achieve this purpose of the study, thirty male soccer players studying in Annamalai University, Annamalai Nagar, Chidambaram, Tamil Nadu, India with the age group of 18 to 22 years were selected as subjects at random. The selected subjects were divided into two equal groups of 15 each, such as soccer specific protocol group and control group. Group-I underwent soccer specific protocol for three days per week for twelve weeks and group-II acted as control they did not participate any special training programmes apart from their regular activities as per their curriculum. Leg strength was selected as criterion variable. The selected variable were tested by using leg lift with dynamometer at prior to and immediately after the training programme. The analysis of covariance (ANCOVA) was used to analyse the significant difference, if any between the groups. The .05 level of confidence was

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fixed to test the level of significance, which was considered as an appropriate.

### Training programme

The soccer specific protocol group underwent training for 3 days per week (alternate days) for twelve weeks at the conditioning and fitness center, in the Department of Physical Education and Sports Sciences, Annamalai University. Every

day the work out last at 45 to 60 minutes approximately. Proper warm-up and cool-down exercise were done on the days of training. The load as fixed for the experimental group based on the 1RM of each subject. The participants performed the following six exercises such as hyperextension, lat pull down, bent-over row (free weight), front squat, leg curl and Leg extension respectively.

Table –I: Change of resistance in percentage for experimental group

WEEK	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Resistance in %	80	82.5	85	87.5	90	92.5	95	97.5	100	102.5	105	107.5
Set	2 sets		2 sets		3 sets		3 sets		3 sets		3 sets	
Duration of exercise	90 sec		120 sec		60 sec		90 sec		90 sec		90 sec	
Rest between exercise	120 sec		90 sec		90 sec		90 sec		60 sec		60 sec	
Rest between set	3 min		3 min		5 min		5 min		5 min		5 min	

### Analysis of the data

The analysis of covariance on leg strength of the pre, post and adjusted post test scores of soccer specific protocol

group and control group have been analyzed and presented in table-II.

Table- II: Analysis of covariance on leg strength of specific protocol group and control group

Test	Soccer specific protocol group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	'F' ratio
Pre test Mean	90.60	90.80	Between	0.30	1	0.03	0.09
S.D	1.82	1.60	Within	91.2	28	3.26	
Post test Mean	92.40	90.87	Between	20.84	1	20.84	7.42*
S.D	1.70	1.54	Within	78.53	28	2.81	
Adjusted Post test Mean	92.49	90.78	Between	3.07	1	3.07	17.06*
			Within	4.80	27	0.18	

\*Significant at .05 level of confidence.

(The table values required for significance at .05 level of confidence for degrees of freedom 1 and 28 and 1 and 27 are 4.20 and 4.21 respectively).

The table II shows that the adjusted post-test means of soccer specific protocol group and control group on leg strength are 92.49 and 90.78 respectively. The obtained 'F' ratio of 17.06 for adjusted post-test means is greater than the table value of 4.21 for df 1 and 27 required for significance at .05 level of confidence on leg strength. The results of the study indicated that there was a significant difference between

the adjusted post-test means of specific protocol group and control group on leg strength of university male soccer players.

The analyses of covariance on leg strength of the pre and post test scores of soccer specific protocol group and control group have been analysed and presented graphically in figure-I.

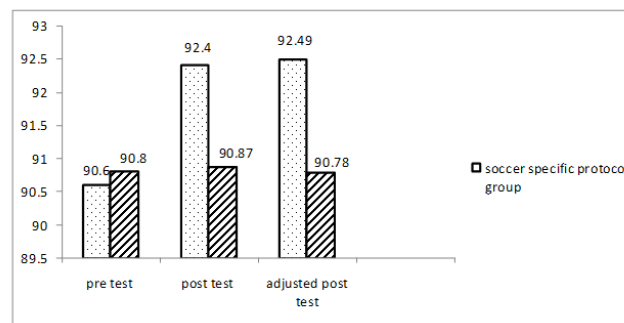


Figure-I: Bar diagram showing the pre, post and adjusted post test mean scores on leg strength of soccer specific protocol group and control group

## DISCUSSIONS

The results of the study indicated that the soccer specific protocol on the selected variable leg strength was significantly improved. The results were in conformation with the findings of numerous studies published recently by Hakkinen (2004) and Kraemer, Ratamess & French (2002). Hunter, Demment and Miller (1987) found that over a 12-week period a program of strength training leg strength increased by 39%. Similar detriments to strength have been supported by other researchers (Hennessy & Watson, 1994; Nelson et al., 1990). Craig and others (1991) reported a significant 5.8% (7.9-kg) increase in leg strength with strength training. It is observed from the previous studies that when properly performed, strength training can provide significant functional benefits and improvement in overall health and well-being, including increased bone, muscle, tendon and ligament strength and toughness.

## CONCLUSIONS

It was concluded that leg strength can be improved significantly due to twelve weeks of soccer specific protocol of university male soccer players. Hence it is suggested that soccer specific protocol should be given to importance while designing training programme for soccer players.

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